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Pedagogical practice and research: Like heads and tails. Both different, both necessary, better together

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Pedagogical Practice and Research

Like Heads and Tails

- Both different*
- Both necessary**
- Better together***

*except they are part of the same coin

**unless you only want half a coin

***always

Brett A. Becker

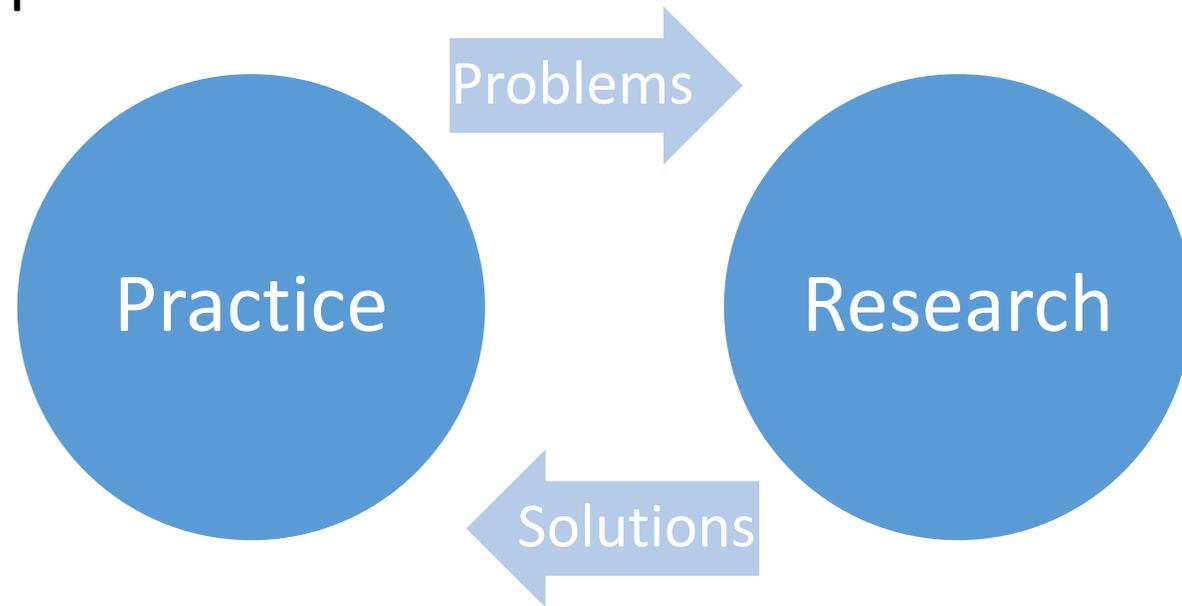
www.brettbecker.com

Pedagogical Practice and Research

- Are not mutually exclusive!
- Step 1 – Research can inform practice
 - If you aren't incorporating some element of research in your teaching, you are not teaching as well as you could.
 - There are lots of people out there that have been down the same road, and you can learn from them. If you are winging it, all you are doing is winging it!
- Step 2 – Practice can drive research
 - If you weren't teaching (and having the problems we all have) there would be a lot less to research!
 - Your practice is unique. Others can benefit from it.

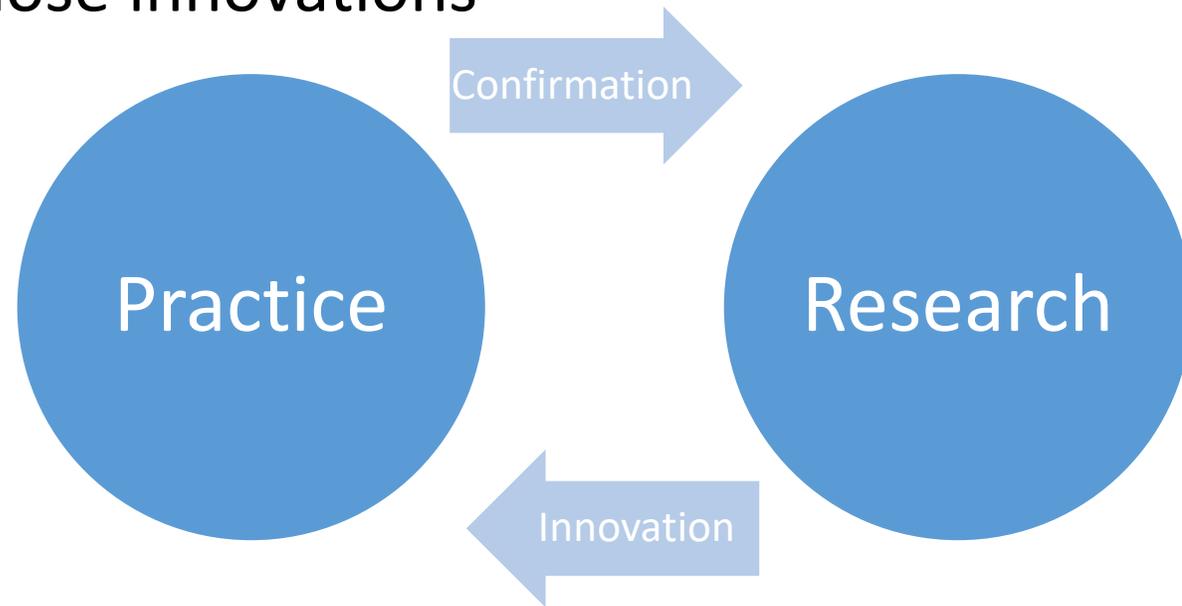
Pedagogical Practice and Research

- Are not mutually exclusive!
- Research informs practice
- Practice drives research



Pedagogical Practice and Research

- Are not mutually exclusive!
- Research can also feed fresh ideas to practice
- Practice can confirm those innovations



Making it Happen

- You should never teach a class without a possible research angle*
- You should **always** have a research question driving your practice
 - More on that later
 - If you don't, you're wasting possibilities
- Most of the time it won't result in a "real" publication or output
 - But when it does, it's great
 - **And if it doesn't, it still makes you a better teacher**

* You also should never teach a class without being informed by at least some research. All that takes is some reading and maybe a little implementation.

Planning Your Research

- You absolutely need the following:
 1. A research question
 - often overlooked – bad idea
 2. A plan to cover logistics
 - Including ethics, GDPR, and all the fun stuff
 - often overlooked – bad idea
 3. A plan to actually carry out the research
 - often underestimated
 4. A dissemination plan
 - often left till the last minute – bad idea. Often this affects 1-3.

Planning Your Research

At all times you should be (at the same time):

- Reading a paper
- Working on a paper / project / output
- Planning your next one

Research Questions

This is simple:

1. Identify a problem

- What do you have that you don't want?
- What do you want that you don't have?

This is hard:

2. **Must** be

- Unambiguous
- Specific
- Measurable
- Achievable
- And probably interesting, and probably not too well-beaten (but these are subjective)
- There are many similar guides online

Research Questions

What's wrong with this question:

Do students do better learning Java or Python?

Must be

- Unambiguous – “what is better”?
- Specific – Where? What students? What class?
- Measurable – how do you measure “learning”?
- Achievable – are you going to teach both Java and Python in the same class?

Research Questions

What's wrong with this question:

Do students do better learning Java or Python?

A *better* question (depending on the circumstances – which may be hard to do...)

Do first year Irish students learning programming for the first time get higher grades in a class teaching Java or a parallel class teaching Python, with all other things equal?

Ethics

Ethical considerations are no longer just for hospitals or animal research.

- In general, at every institution, you need to get consent to conduct research *beyond standard educational practices*.
- In general, every institution has an “ethics committee” or an “institutional research board” or similar.
- In general, if you are doing research on **humans** or with **human data** you need permission from your institution.
 - Students are humans.
- It is **your** responsibility to find out the procedures at your institution!
- Typically, this must be done **before any data collection!**

GDPR

This is *in addition to* Ethical considerations. This almost certainly affects your research (and probably your practice).

All institutions that process data (who doesn't?) are obligated to have a **Data Protection Officer**. Ask them!

https://www.citizensinformation.ie/en/government_in_ireland/data_protection/

Pathways to Publication

- Talk to people (collaboration is **KEY**)
- Consider *everything*. **Not just journals!** Conferences these days have posters (many that count as publications), panels, short papers, full papers, lightning talks, doctoral consortia, working groups, birds-of-a-feather sessions, etc. etc.
- Alt-metrics are also a thing: blogs, tweets, media (any **impact**)
- For hundreds (literally) of slides on publishing in Computer Science Education (especially in Ireland) see:
<https://www.brettbecker.com/talks-panels-etc/>

Self Promotion and Getting “it” out there

- **Collaborate**
- Talk to people
- Collaborate
- Join groups and communities of practice like SIGCSEire.acm.org (Ireland ACM [SIGCSE](http://SIGCSE.org) Chapter) free!
- *Collaborate*
- **Sell yourself** - It's hard at first. But nobody's going to come to you and ask how awesome your work is. You need to tell them.
- **Collaborate**
- You *need* a website
- **Collaborate**
- You *need* a Google Scholar Profile (scholar.google.com)
- And, collaborate